

Model 520 Series

Hand-Held Non-Contacting Electrostatic Voltmeters



The Trek Model 520 series Hand-Held Electrostatic Voltmeters provide accurate, noncontacting measurements of electrostatic surface voltage for ESD applications in either ionized or non-ionized environments. Industrial applications include measuring charge accumulation in the LCD manufacturing process or measuring static charge in semiconductor production. The Model 520 series voltmeters utilize a new measurement technique that overcomes the disadvantage of the typical hand-held fieldmeter by providing surface voltage measurements which are essentially independent of the sensor probe-to-measured surface spacing.

Model 520

Over a spacing range of 5 mm to 25 mm, the 520 voltmeter provides better than a 5% voltage measurement accuracy, while the typical fieldmeter provides a voltage measurement error in excess of 50%.

Model 523-1

Over a spacing range of 30 mm to 60 mm, the 523 voltmeter provides greater than a 5% voltage measurement accuracy, while the typical fieldmeter provides a voltage measurement error in excess of 50%.

The 520 series provides a measurement system which complies with standardized calibration equipment traceable to the National Institute of Standards and Technology. The 520 series hand-held voltmeters employ a slender sensor probe design that provides flexibility to make measurements in many locations which are impossible to reach using the large, bulky sensing surfaces of the typical hand-held fieldmeter. The slender design also allows for higher spatial resolution capability by allowing the measurement of small surface areas. A "hold" pushbutton retains the displayed measured voltage value for recording purposes.

- **Model 520**
Measurement
Range: 0 to ± 2 kV DC
- **Model 523-1**
Measurement
Range: 0 to ± 20 kV DC
- **Accurately measures surface voltage at a wide range of spacings**
- **No need to maintain a fixed spacing**
- **Inspect small spots for charge accumulation**
- **Measure charge accumulation in difficult-to-reach locations**
- **Chopper stabilized for drift-free operation in ionized environments**
- **Low cost**
- **CE Compliant**
- **Optional voltage monitor available for the Model 520**



Measurement and Power Solutions™

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Model 520 Series General Specifications

All Model 520 specifications are with a probe-to-surface separation of 15 mm, ± 10 mm.

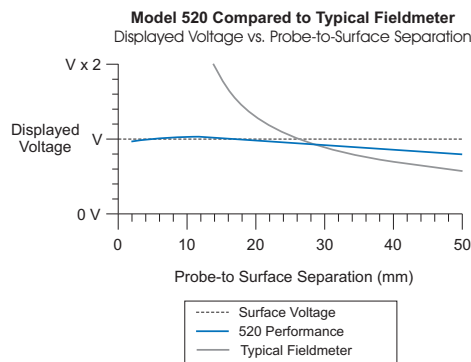
All Model 520 specifications are with a probe-to-surface separation of 45 mm, ± 15 mm.

Model 520-1 Performance

Measurement Range
0 to ± 2 kV DC.

Accuracy

Better than $\pm 5\%$ of full scale over the entire recommended probe-to-surface separation range of 5 mm to 25 mm.



Dimensions

31 mm H x 59 mm W x 173 mm D
(1.2" H x 2.4" W x 6.8" D).

Weight

200 g (7 oz), with battery.

Model 520-2 Voltage Monitor Output

A 1.3 mm jack provides a low-voltage replica of the measured voltage.

Ratio

1/1000th of the measured voltage.

Speed of Response (10% to 90%)

Less than 25 ms for an input step change of 2 kV.

Output Impedance

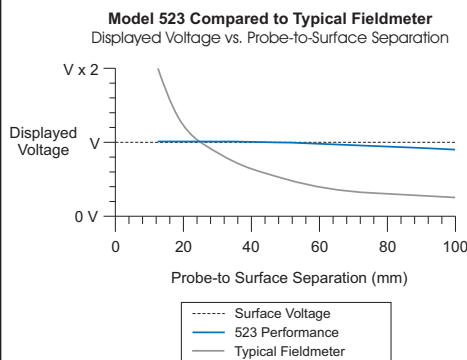
47 Ω .

Model 523-1 Performance

Measurement Range
0 to ± 20 kV DC.

Accuracy

Better than $\pm 5\%$ of full scale over the entire recommended probe-to-surface separation range of 30 mm to 60 mm.



Dimensions

31 mm H x 59 mm W x 183 mm D
(1.2" H x 2.4" W x 7.3" D).

Weight

200 g (7 oz), with battery.

Common Features

Power On/Off

A push-button switch.

Stability

Drift with Time

Less than 600 ppm/hour, noncumulative.

Drift with Temperature

Less than 600 ppm/ $^{\circ}$ C.

Common Features (Con't.)

Operating Time

8 hours with a new battery.

Hold

A momentum push-button will command the voltage display to hold the value displayed until the switch is released.

Voltage Display

3 1/2 digit liquid crystal display.

Range (Model 520)

0 to ± 1999 V.

Range (Model 523)

0 to ± 19.99 kV.

Resolution (Model 520)

1 V.

Resolution (Model 523)

10 V.

Zero Offset

Less than ± 1 count.

Sampling Rate

2.5 readings per second.

Zero Offset

Less than ± 4 counts.

Power Requirements

One (1) 9-volt NEDA 1604 battery, IEC 6R61 battery, or equivalent.

Ground Receptacle

Snap-on connector.

Operating Conditions

Temperature

15 $^{\circ}$ C to 35 $^{\circ}$ C.

Relative Humidity

To 85%, noncondensing.

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All specifications are subject to change.
1130/DEC

Ordering Information

Model 520 Series

Item	Part No.
Hand-held Electrostatic Voltmeter (0 to ± 2 kV DC).....	520-1-CE
Hand-held Electrostatic Voltmeter with Voltage Monitor Output (0 to ± 2 kV DC).....	520-2-CE
Hand-held Electrostatic Voltmeter (0 to ± 20 kV DC)...	523-1-CE

Accessories Supplied

Item	Part No.
Operating Instructions (Model 520).....	23100
Operating Instructions (Model 523).....	23099
Voltage Monitor Output Cable Assembly (Model 520-2)...	B6005
Ground Reference Cable Assembly.....	43405
9-volt NEDA 1604 Battery, IEC 6R61 Battery, or equivalent.....	F1003



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